

PATENT

Atty. Dkt. No. APPM/004191.C1/CPI/WCVD/PJS

**REMARKS**

This is intended as a full and complete response to the Office Action dated September 27, 2005, having a shortened statutory period for response set to expire on December 27, 2005. Please reconsider the claims pending in the application for reasons discussed below.

Claims 3-6, 8-14 and 17-20 remain pending in the application and are shown above. Claims 3-6, 8-14 and 17-20 stand rejected by the Examiner. Reconsideration of the rejected claims is requested for reasons presented below.

**Obviousness-Type Double Patenting**

Claims 3-6, 8-14 and 17-20 stand rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-42 of U.S. Patent No. 6,544,340. The Examiner states that the claims of the present invention are broader than those of the patent because the patent claims holes/recesses paired with lift pins and the present application teaches a substrate support with a first and second edge ring wherein the first edge ring is a purge ring and both rings mate each other by tapered recesses and respective tapered pins. Applicant respectfully traverses the rejection.

Patent No. 6,544,340 claims a substrate support assembly for supporting a workpiece including a support plate and a second plate, wherein a boss extending from the second plate mate with a recess of the support. Patent No. 6,544,340 also claims a purge ring defining a channel between the purge ring and the support plate adapted to flow a fluid adjacent a perimeter of the workpiece. However, Patent No. 6,544,340 does not claim a second edge ring and one or more matching tapered pins of a second edge ring for mating engagement with one or more tapered recesses of a first edge ring, as recited in claims 3-6, 8-14 and 17-20. Therefore, the claims of the present invention include additional elements not claimed in Patent No. 6,544,340. Withdrawal of the rejection is respectfully requested.

Page 7

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## PATENT

Atty. Dkt. No. APPM/004181.C1/CPI/WCVD/PJS

Claims 3-6, 8-14 and 17-20 stand rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-24 of U.S. Patent No. 6,375,748. The Examiner states that the claims held to the patent are narrower than the present invention because the patent teaches an edge ring with hollow regions wherein a plurality of pins correspond to these hollow regions and the present application teaches a substrate support with a first and second edge ring wherein the first edge ring is a purge ring and both rings mate each other by tapered recesses and respective tapered pins. Applicant respectfully traverses the rejection.

Patent No. 6,375,748 claims a substrate support having a plurality of pins and an edge ring having a plurality of hollow regions, wherein the plurality of pins are inserted within the plurality of hollow regions. However, Patent No. 6,375,748 does not claim a second edge ring having one or more matching tapered pins and the one or more matching tapered pins of the second edge ring are provided for mating engagement with one or more tapered recesses of a first edge ring, as recited in claims 3-6, 8-14 and 17-20. Therefore, the claims of the present invention include additional elements not claimed in Patent No. 6,375,748. Withdrawal of the rejection is respectfully requested.

**Claim Rejections - 35 U.S.C. §102**

Claims 3-6, 8-14 and 17-20 stand rejected under 35 U.S.C § 102(b) as being anticipated by *Cheng et al.* (EP 0 553 691). The Examiner states that *Cheng et al.* teaches a substrate support 40, a first edge ring 50 having one or more tapered recess 52 and a second edge ring 100 having one or more matching tapered pins 72, wherein the first edge ring comprises a purge ring. Applicant respectfully traverses the rejection.

*Cheng et al.* discloses a substrate support 40, a shield ring 50, and a support means 70. (See, column 4, lines 25-55.) The shield ring 50 may comprises a plurality of shield rings, an inner ring 102, an adjacent ring 104, and an outermost ring 105, and alignment of these shield rings are through tapered edges in complementary manner, not through pins. (See, column 9, lines 40-55.) In addition, the support means 70 of *Cheng et al.* is provided to support the shield ring 50 and secure the shield ring 50 to the walls of a chamber 2. Accordingly, the shield ring 50 of *Cheng et al.* is disposed on the support means 70 and is not disposed on the substrate support 40. The support

## PATENT

Atty. Dkt. No. APPM/004191.C1/CPI/WCVD/PJS

means 70 of *Cheng et al.* is secured to the walls of the chamber 2 and is not disposed on the substrate support 40, either. Therefore, *Cheng et al.* does not teach, show, or suggest a first edge ring disposed on a substrate support, as recited in claims 3-6, 8-14, and 17-20.

In addition, *Cheng et al.* discloses alignment mechanism for the substrate support 40, the shield ring 50, and the support means 70. First of all, the substrate support 40 and the shield ring 50 are engaged when the substrate support 40 is elevated and are aligned through tapering an outer edge 44 of the substrate support 40 and tapering the inner edge 54 of the shield ring 50. (See, column 7, lines 25-27.) Secondly, rotational alignment of the shield ring 50 with the support means 70 are through a tapered slot 52 of the shield ring 50 corresponding to a tapered pin 72 of the support means 70. (See, column 8, lines 3-24.) *Cheng et al.* further discloses that the support means 70 could be a circular shoulder, support bracket, or a ring supported by a rigid support secured to the walls of the chamber 2. (See, column 7, lines 52-58, column 8, lines 1-25.) Comparatively, the support means 70 of *Cheng et al.* may be a chamber body ring, when fabricated as a ring secured to a chamber body or chamber wall; however, the support means 70 of *Cheng et al.* is not an edge ring. *Cheng et al.* does not teach, show or suggest alignment of two edge rings through tapered recesses and tapered pins. Therefore, *Cheng et al.* does not teach, show or suggest a first edge ring having one or more tapered recesses and a second edge ring having one or more matching tapered pins, as recited in claims 3-6, 8-14 and 17-20.

Accordingly, *Cheng et al.* does not teach, show or suggest a first edge ring disposed on a substrate support, the first edge ring having one or more tapered recesses, and a second edge ring having one or more matching tapered pins for mating engagement with the one or more tapered recesses of the first edge ring, as recited in claims 3-6, 8-14, and 17-20. Withdrawal of the rejection is respectfully requested.

Claims 3-6, 8-14 and 17-20 stand rejected under 35 U.S.C § 102(b) as being anticipated by *Koal et al.* (U.S. Patent No. 6,159,299). The Examiner states that *Koal et al.* teaches a substrate support 150, a first edge ring 280 having one or more tapered recesses and a second edge ring 200 having one or more matching tapered pins 272, wherein the first edge ring comprises a purge ring. The Examiner further states that the

## PATENT

Atty. Dkt. No. APPM/004181.C1/CPI/WCVD/PJS

edge ring assembly 200 is secured to the purge ring 280 by centering bolts (pins) 271 engaged with the slots 288. Applicant respectfully traverses the rejection.

*Koal et al.* discloses a substrate support 150, a purge ring 280, and an edge ring assembly 200 for a dual-purge flow pattern to be established. (See, Abstract.) The purge ring 280 is disposed circumferentially around the substrate support 150 and contains a plurality of passages, slots 286, purge holes 285 to allow a first purge gas flow 291 therein. (See, column 5, lines 1-10 and lines 21-30.) In addition, the edge ring assembly 200 is an assembly secured to an edge ring to assist the edge ring. As described in *Koal et al.*, the edge ring assembly 200 is provided near an outer edge of the purge ring 280 and is secured to the purge ring 280 for assisting the purge ring 280 such that a channel 226 can be formed between the purge ring 280 and the edge ring assembly 200 for directing a second purge gas flow 292 therein. Therefore, *Koal et al.* discloses a first edge ring and a first edge ring assembly attached to assist the first edge ring. *Koal et al.* does not teach, show or suggest a second edge ring for mating engagement with a first edge ring.

As described in *Koal et al.*, three rings 240, 230, 220 of the ring assembly 200 are bolted together by three centering bolts 271 and are secured to an outer perimeter 280P2 of the purge ring 280 by fastening the three centering bolts 271 with three slots 288 of the purge ring 280. As a result, the ring assembly 200 can rest upon three spacing pins 272 which are screwed into the outer portion 284 of the purge ring 280 as part of the purge ring 280 and the channel 226 can form therebetween for flowing purge gas therein. (See, column 5, lines 64-67 and column 6, lines 1-46.) Therefore, the three centering bolts 271 of *Koal et al.* are provided to bolt three rings together and to secure/fasten the ring assembly 200 to the purge ring 280, and do not provide mating engagement with an second edge ring.

Accordingly, *Koal et al.* does not teach, show or suggest a first edge ring disposed on a substrate support, the first edge ring having one or more tapered recesses, and a second edge ring having one or more matching tapered pins for mating engagement with the one or more tapered recesses of the first edge ring, as recited in claims 3-6, 8-14, and 17-20. Withdrawal of the rejection is respectfully requested.

PATENT

Atty. Dkt. No. APPM/004191.C1/CPI/WCVD/PJS

New claims are presented for consideration by the Examiner and are supported by the specification and the drawings, at least at paragraphs 35, 38-42 and Figures 5-11, without introducing new matter. Applicants submit that Patent No. 6,544,340, Patent No. 6,375,748, *Cheng et al.* and *Koal et al.*, alone or in combination, do not teach, show or suggest a substrate support having a surface contacting a first surface of a substrate, a purge ring disposed on the substrate support, the purge ring having one or more tapered recesses, and a shadow ring having one or more matching tapered pins for mating engagement with the one or more tapered recesses of the shadow ring, wherein the shadow ring overhangs a portion of a second surface of the substrate and the second surface of the substrate is opposite the first surface of the substrate, as recited in claims 21-25.

In conclusion, the references cited by the Examiner, alone or in combination, do not teach, show, or suggest the invention as claimed.

The secondary references made of record are noted. However, it is believed that the secondary references are no more pertinent to the Applicant's disclosure than the primary references cited in the office action. Therefore, Applicant believes that a detailed discussion of the secondary references is not necessary for a full and complete response to this office action.

Having addressed all issues set out in the office action, Applicant respectfully submits that the claims are in condition for allowance and respectfully request that the claims be allowed.

Respectfully submitted,



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Page 11

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